3.0 LIMITING CONDITIONS FOR OPERATION

B. Emergency Air Treatment Systems

1. Excep' as specified in Specification 3.0.B.4 below, circ.its of any emergency air treatment system and the diesel generators required for operation of such circuits shall be operable at all times when the systems may be required.

2. a. The results of the in-place cold DOP and halogenated hydrocarbon tests at design flows on HEPA filters and charcoal adsorber banks shall show $\geq$ 99% DOP removal and $\geq$ 99% halogenated hydrocarbon removal.

   b. The results of laboratory carbon sample analysis from the hydrogen purge system carbon shall show $\geq$ 90% radioactive methyl iodide removal at a velocity within 20 percent of the hydrogen purge air treatment system design, 0.15 to 0.5 mg/m^3 inlet methyl iodide concentration, $\geq$ 95% R. H. and $\geq$ 190°F.

   c. The results of laboratory carbon sample analysis from the fuel handling system or the reactor building purge system carbon shall show $\geq$ 90% radioactive methyl iodide removal at a velocity within 20 percent of fuel handling air treatment system design, 0.05 to 0.15 mg/m^3 inlet methyl iodide concentration, $\geq$ 95% R. H. and $\geq$ 125°F.

   d. The results of laboratory carbon sample analysis from the penetration room system carbon shall show $\geq$ 85% radioactive methyl iodide removal at a velocity within 20 percent of in-containment system design, 0.15 to 0.5 mg/m^3 inlet methyl iodide concentration, $\geq$ 95% R. H. and $\geq$ 190°F.

   e. All emergency air treatment system fans shall be shown to operate within $\pm$ 10% of design flow.

3. The total fuel handling air treatment system bypass flow or the total reactor building purge system bypass flow shall not exceed 1 percent of the respective system design flow rate under operating conditions.

4. a. From and after the date that one circuit of the penetration room air treatment system is made or found to be inoperable for any reason, reactor operation is permissible only during the succeeding thirty days unless such circuit is sooner made operable, provided that during such thirty days all active components of the other penetration room air treatment circuit shall be operable.

   b. From and after the date that one circuit of the hydrogen purge air treatment system is made or found to be inoperable for any reason, reactor operation is permissible only during the succeeding thirty days unless such circuit is sooner made operable, provided that during such thirty days all active components of the other hydrogen purge air treatment circuit shall be operable.

5. a. From and after the date that the reactor building purge system or the air treatment system is made or found to be inoperable for any reason, fuel handling operations shall be terminated immediately in that area controlled by the respective system.

   b. If the conditions for the penetration room or hydrogen purge air treatment system cannot be met, operations shall be terminated immediately and the reactor in the cold shutdown condition within 24 hours.

C. Control Room Air Treatment System

1. Except as specified in Specification 3.0.B.3 below, the control room air treatment system and the diesel generators required for operation of this system shall be operable at all times when containment integrity is required.

2. a. The results of the in-place cold DOP and halogenated hydrocarbon tests at design flows on HEPA filters and charcoal adsorber banks shall show $\geq$ 99% DOP removal and $\geq$ 99% halogenated hydrocarbon removal.

b. The results of laboratory carbon sample analysis shall show $\geq$ 90% radioactive methyl iodide removal at a velocity within 20% of system design, 0.05 to 0.15 mg/m^3 inlet iodide concentration, $\geq$ 95% R. H. and $\geq$ 125°F.

c. Fans shall be shown to operate within $\pm$ 10% design flow.

3. From and after the date that the control room air treatment system is made or found to be inoperable for any reason, reactor operation is permissible only during the succeeding seven days unless such circuit is sooner made operable.

4. If these conditions cannot be met, reactor shutdown shall be initiated and the reactor shall be in the cold shutdown condition within 24 hours.

BASES

B. Emergency Air Treatment System

The penetration room and hydrogen purge air treatment system is designed to filter the penetration room and reactor building atmosphere during accident conditions. Both of these air treatment systems are designed to be started by remote signal when required following an accident. Should one system fail to start, the redundant system is designed to start automatically. Each of the systems has 100 percent capacity. The fuel handling air treatment system is designed to filter the refueling building atmosphere to the facility vent during refueling conditions. If the fuel handling air treatment system is on standby, the system is designed to filter the refueling building atmosphere to the facility vent during refueling accident conditions and is automatically started upon high radiation signal. Upon initiation isolation valves in the ventilation system must close to allow air flow through the air treatment system. If these valves do not close tightly, excessive bypass leakage could occur to negate the usefulness of the HEPA filters and charcoal adsorbers to reduce potential radioiodine releases to the atmosphere. Therefore, the bypass leakage for the total system has been limited to 1 percent.

High efficiency particulate absolute (HEPA) filters are installed before the charcoal adsorbers to prevent clogging of the iodine adsorbers for all emergency air treatment systems. The charcoal adsorbers are installed to reduce the potential release of radioiodine to the environment. The in-place test results should indicate a system leak tightness of less than 1 percent bypass leakage for the charcoal adsorbers and a HEPA efficiency of at least 90 percent on the fuel handling system sample and at least 85 percent on the in-containment system samples for expected accident conditions. If the efficiencies of the HEPA filters and charcoal adsorbers are as specified, the resulting doses will be less than the 10 CFR 100 guidelines for the accidents analyzed. Operation of the fans significantly different from the design flow will change the removal efficiency of the HEPA filters and charcoal adsorbers.

Only one of each of the emergency air treatment systems is needed to cleanup the reactor building or penetration room atmosphere during accident conditions. If one system is found to be inoperable, there is not an immediate threat to the containment system performance and reactor operation may continue while repairs are being made. If neither circuit is operable, the plant is brought to a condition where the emergency air treatment system would not be required. If the fuel handling air treatment system is found to be inoperable, all fuel handling and fuel movement operations will be terminated until the system is made operable.

C. Control Room Air Treatment System

The control room air treatment system is designed to filter the control room atmosphere for intake air and/or for recirculation during control room isolation conditions. The control room air treatment system is designed to automatically start upon control room isolation and to maintain the control room pressure to the design positive pressure so that all leakage should be out leakage.

High efficiency particulate absolute (HEPA) filters are installed before the charcoal adsorbers to prevent clogging of the iodine adsorbers. The charcoal adsorbers are installed to reduce the potential intake of radioiodine to the control room. The in-place test results should indicate a system leak tightness of less than 1 percent bypass leakage for the charcoal adsorbers and a HEPA efficiency of at least 99 percent removal of DOP particulates. The laboratory carbon sample test results should indicate a radioactive methyl iodide removal efficiency of at least 90 percent for expected accident conditions. If the efficiencies of the HEPA filters and charcoal adsorbers are as specified, the resulting doses will be less than the allowable levels stated in Criterion 19 of the General Design Criteria for Nuclear Power Plants, Appendix A to 10 CFR Part 50. Operation of the fans significantly different from the design flow will change the removal efficiency of the HEPA filters and charcoal adsorbers.

If the system is found to be inoperable, there is not an immediate threat to the control room and reactor operation or refueling operation may continue for a limited period of time while repairs are being made. If the system cannot be repaired within seven days, the reactor is shutdown and brought to cold shutdown within 24 hours.

4.0 SURVEILLANCE REQUIREMENTS

B. Emergency Air Treatment Systems

1. At least once per operating cycle, the following conditions shall be demonstrated.

   a. Pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 6 inches of water at system design flow rate.

   b. Air distribution is uniform within 20% across HEPA filters and charcoal adsorbers.

2. a. The tests and sample analysis of Specification 3.0.B.2 for the hydrogen purge air treatment system shall be performed initially and each refueling outage not to exceed 18 months or after every 720 hours

of system operation and following significant painting, fire or chemical release in any ventilation zone communicating with the system.

b. The tests and sample analysis of Specification 3.0.B.2 for the reactor building purge system and the fuel handling air treatment system shall be performed initially and at least once per year for standby service or after every 720 hours of system operation and following significant painting, fire or chemical release in any ventilation zone communicating with the system.

c. The tests and sample analysis of Specification 3.0.B.2 for the penetration room air treatment system shall be performed initially and each refueling outage not to exceed 18 months or after every 720 hours of system operation and following significant painting, fire or chemical release in any ventilation zone communicating with the system.

d. Cold DOP testing shall be performed after each complete or partial replacement of a HEPA filter bank or after any structural maintenance on the system housing.

e. Halogenated hydrocarbon testing shall be performed after each complete or partial replacement of a charcoal adsorber bank or after any structural maintenance on the system housing.

f. Each circuit shall be operated at least 10 hours every month.

3. Initially and at least once per year, the reactor building purge system and the fuel handling standby air treatment system shall be tested with cold DOP for total system bypass of the filter banks.

4. a. At least once per operation cycle initiation of each branch of the emergency air treatment system shall be demonstrated.

b. At least once per operating cycle manual operability of the bypass valve for filter cooling shall be demonstrated.

c. When one circuit of the penetration room air treatment system becomes inoperable the other circuit shall be demonstrated to be operable immediately and daily thereafter.

d. When one circuit of the hydrogen purge air treatment system becomes inoperable, the other circuit shall be demonstrated to be operable immediately and daily thereafter.

5. During each refueling period, a system test shall be conducted to demonstrate proper operation of the penetration room air treatment system. This test shall consist of visual inspection, a flow measurement using the flow instrument installed at the outlet of each unit and pressure drop measurements across each filter unit. In addition, a test signal shall be applied to demonstrate proper actuation of the penetration room ventilation system. Fan motors shall be operated, and the louvers and other mechanical systems shall be proven operable and adjustable from their remote location.

6. The test of the penetration room air treatment system shall be considered satisfactory if control board indication verifies that all components have responded properly to the actuation signal.

7. An in-place system test of the hydrogen purge air treatment system shall be performed during each refueling period using written procedures. These tests shall consist of visual inspection, a flow measurement using flow instruments in the purging station and pressure drop measurements across the filter bank. Fan motors shall be operated, and valves shall be proven operable. This test shall demonstrate that under simulated emergency conditions the system can be placed into operation as needed.

8. Hydrogen concentration instruments for the hydrogen purge air treatment system shall be calibrated each refueling period with proper consideration to moisture effect.

C. Control Room Air Treatment System

1. At least once per operating cycle, the pressure drop across the combined HEPA filters and charcoal adsorber banks shall be demonstrated to be less than 6 inches of water at system design flow rate.

2. a. The tests and sample analysis of Specification 3.0.C.2 shall be performed initially and at least once per year for standby service or after every 720 hours of system operation and following significant painting, fire or chemical release in any ventilation zone communicating with the system.

b. Cold DOP testing shall be performed after each complete or partial replacement of the HEPA filter bank or after any structural maintenance on the system housing.

c. Halogenated hydrocarbon testing shall be performed after each complete or partial replacement of the charcoal adsorber bank or after any structural maintenance on the system housing.

d. Each circuit shall be operated at least 10 hours every month.

3. At least once per operating cycle automatic initiation of the control room air treatment system shall be demonstrated.

B. Emergency Air Treatment Systems

The hydrogen purge system is composed of two purging stations. The purge system is operated as necessary to maintain the hydrogen concentration below the control limit. The exhaust from the purge system is discharged to the unit vent.

The purge rate is controlled through the use of a purging station consisting of two purge units. Each unit consists of a purge blower, dehumidifier, filter train, purge flowmeter, sample connection and flowmeter and associated piping and valves.

The blower is a rotary positive type. The dehumidifier consists of two redundant heating elements inserted in a section of ventilation duct. The function of the dehumidifier is to sufficiently increase the temperature of the entering air to assure 70 percent relative humidity entering the filter train with 100 percent saturated air entering the dehumidifier. The purpose of the dehumidifier is to assure optimum charcoal filter efficiency. Heating element control is provided by a thermoswitch. Humidity indication is provided downstream of the heating elements by a humidity readout gage. The filter train provides prefiltration, high efficiency particulate filteration and charcoal filtration. Face velocity to the charcoal filter is low. The charcoal filter is composed of a module consisting of two inch deep double tray carbon cells. Both the purge flow to the unit vent and the purge sample flow are metered using rotometers. Both of these rotometers have an accuracy of $\pm$ two percent of full scale,and each has remote readout capability. The purge sample activities can be collected, counted and analyzed in the radiochemistry laboratory. Makeup air to the reactor building is supplied by fans using outside air.

Following a LOCA, there is adequate time before purging is required to permit checkout of the purging station.

The penetration room ventilation system is designed to collect and process potential reactor building penetration room leakage to minimize environmental activity levels resulting from post accident reactor building leaks. The system consists of a sealed penetration room two redundant filter trains and two redundant fans discharging to the unit vent. The entire system is activated by a reactor building pressure engineered safety features signal and initially requires no operator action.

Each filter train is constructed with a prefilter, an absolute filter, and a charcoal filter in series. The design flow rate through each of these filters is 2000 scfm, which is significantly higher than the 1.25 scfm maximum leakage rate from the reactor building at a leak rate of 0.1% per day. Except for periodic ventilation of the penetration room, period testing of this system will show that the system is available for its engineered safety features function. During this test, the system will be inspected for such things as water, oil, or other foreign material, gasket deterioration in the HEPA units, and unusual or excessive noise or vibration when the fan motor is running.

Pressure drop across the combined HEPA filters and charcoal adsorbers of less than 6 inches of water at the system design flow rate will indicate that the filters and adsorbers are not clogged by excessive amounts of foreign matter. Pressure drop and air distribution should be determined at least once per operating cycle to show system performance capability.

The frequency of tests and sample analysis are necessary to show that the HEPA filters and charcoal adsorbers can perform as evaluated. The charcoal adsorber efficiency test procedures should allow for the removal of one adsorber tray, emptying of one bed from the tray, mixing the adsorbent thoroughly and obtaining at least two samples. Each sample should be at least two inches in diameter and a length equal to the thickness of the bed. If test results are unacceptable, all adsorbent in the system shall be replaced with an adsorbent qualified according to Table 1 of Regulatory Guide 1.52. The replacement tray for the adsorber tray removed for the test should meet the same adsorbent quality. Tests of the HEPA filters with DOP aerosol shall be performed in accordance to ANSI N101.1. Any HEPA filters found defective shall be replaced with filters qualified pursuant to Regulatory Position C.3.d. of Regulatory Guide 1.52.

Operation of the emergency air treatment system each month for at least ten (10) hours will demonstrate operability of the filters and adsorber system and remove excessive moisture built up on the adsorber.

With the fuel handling standby air treatment system operating, DOP aerosol can be admitted at the refueling building ventilation system intake. Detection of more than 1 percent DOP at the inlet to the facility vent shall be considered an unacceptable test result and the isolation valves repaired to prevent bypass leakage and test repeated.

If significant painting, fire or chemical release occurs such that the HEPA filter or charcoal adsorber could become contaminated from the fumes, chemicals or foreign material, the same tests and sample analysis shall be performed as required for operational use. The determination of significant shall be made by the operator on duty at the time of the incident. Knowledgeable staff members should be consulted prior to making this determination.

Demonstration of the automatic initiation capability and operability of filter cooling is necessary to assure system performance capability. If one of the air treatment system for the hydrogen purge or penetration room ventilation is inoperable, the other system must be tested daily. This substantiates the availability of the operable system and thus reactor operation can continue for a limited period of time.

C. Control Room Air Treatment System

The purpose of the control room filtering system is to limit the particulate and gaseous fission products to which the control area would be subjected during an accidental radioactive release in or near the Auxiliary Building. The system is designed with one 100 percent capacity filter train which consists of a prefilter, high efficiency particulate filters, charcoal filters and a fan.

Since the system is not normally operated, a periodic test is required to insure operability when needed. During this test the system will be inspected for such things as water, oil, or other foreign material; gasket deterioration, adhesive deterioration in the HEPA units; and unusual or excessive noise or vibration when the fan motor is running.

Pressure drop across the combined HEPA filters and charcoal adsorbers of less than 6 inches of water at the system design flow rate will indicate that the filters and adsorbers are not clogged by excessive amounts of foreign matter. Pressure drop should be determined at least once per operating cycle to show system performance capability.

The frequency of tests and sample analysis are necessary to show that the HEPA filters and charcoal adsorbers can perform as evaluated. The charcoal adsorber efficiency test procedures should allow for the removal of one adsorber tray, emptying of one bed from the tray, mixing the adsorbent thoroughly and obtaining at least two samples. Each sample should be at least two inches in diameter and a length equal to the thickness of the bed. If test results are unacceptable, all adsorbent in the system shall be replaced with an adsorbent qualified according to Table 1 of Regulatory Guide 1.52. The replacement tray for the adsorber tray removed for the test should meet the same adsorbent quality. Tests of the HEPA filters with DOP aerosol shall be performed in accordance to ANSI N101.1. Any HEPA filters found defective shall be replaced with filters qualified pursuant to Regulatory Position C.3.d. of Regulatory Guide 1.52.

Operation of the system for 10 hours every month will demonstrate operability of the filters and adsorber system and remove excessive moisture built up on the adsorber.

If significant painting, fire or chemical release occurs such that the HEPA filter or charcoal adsorber could become contaminated from the fumes, chemicals or foreign material, the same tests and sample analysis shall be performed as required for operational use. The determination of significant shall be made by the operator on duty at the time of the incident. Knowledgeable staff members should be consulted prior to making this determination.

Demonstration of the automatic initiation capability is necessary to assure system performance capability.